LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

CANEY LAKE

WATERBODY EVALUATION &
RECOMMENDATIONS

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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TABLE OF CONTENTS

WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Largemouth bass are managed to provide anglers the greatest opportunity of catching trophy sized fish. Sunfish and Crappie are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish.

Caney Creek Reservoir was designated as a Louisiana Trophy Bass Lake in 1994. The designation is limited to three Louisiana water bodies and follows a determination that a water body has suitable potential to consistently produce largemouth bass in the 10-15 pound range. It is based on criteria including the following:

1. Successful introduction of Florida largemouth bass
2. Habitat with similar environmental features as original range of Florida largemouth bass
3. No incompatible gear conflicts (webbing)
4. Long term LDWF regulatory control
5. Angler understanding and support of associated regulations

Trophy bass are the product of 1) favorable genetics, 2) suitable habitat with abundant and available forage, and 3) adequate age to fulfill growth potential. Introductions of Florida largemouth bass provide the foundation for trophy bass through the incorporation of genetic material into the bass population. Caney bass harvest regulations are designed to provide for fulfillment of growth potential in some bass, but also to positively influence bass population size structure through harvest. Caney bass regulations that include a 15”-19” slot limit with an 8 fish creel and 2 fish allowed over slot are designed to increase harvest of bass smaller than 15” in length. Harvest of smaller bass provides a mechanism for removal of bass with limited genetic potential and increases available forage for larger bass. Removal of small bass through harvest is a key role in Caney Creek Reservoir trophy bass management and is encouraged.

Sunfish and Crappie are managed to provide a healthy, sustainable population. Smaller fish are to provide forage for bass. Adult fish provide harvest opportunity for anglers.

Commercial

The physical characteristics of Caney Creek Reservoir do not support the large rough fish species that normally comprise a commercial fishery; therefore, a commercial fishery strategy is not used. The existing prohibition on commercial fishing gear follows the recreational strategy chosen for largemouth bass by providing the greatest opportunity of catching trophy sized fish.

Species of Special Concern

No threatened or endangered fish species are found in this waterbody.

EXISTING HARVEST REGULATIONS

Recreational

Crappie - 50 daily per person, no size restrictions

Sunfish (Bluegill, Redear, etc.) - no daily limit or size restrictions

Largemouth Bass - 15-19" slot limit - all bass that measure from 15.0 to 19.0 inches must be released immediately - 8 fish daily limit, of which no more than 2 can be over 19 inches

Yellow Bass - 50 daily per person, no size restrictions.

Trot lines, yo-yos, and set hooks legal

The 2013 recreational fishing regulations may be viewed at the link below:

http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/31743-2013-fishing-regulations/ldwf_fishing_low-res.pdf

Commercial

The use of gill nets, trammel nets, fish seines and hoop nets are prohibited.

The 2013 commercial fishing regulations may be viewed at the link below:

http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/31745-commercial-fishing-regulations/2013_commercial_fishing_low-res.pdf

SPECIES EVALUATION

Recreational

Largemouth Bass

Relative abundance, size distribution and relative weight-

Standardized sampling was initiated on Caney Creek Reservoir in 1989 with electrofishing. As with any fish sampling technique, electrofishing is influenced by environmental factors that can create significant variance in results. Accordingly, LDWF sampling is standardized to the greatest extent possible and analyzed over long periods of time to establish population trends. Largemouth bass are targeted as a species indicative of the overall fish population due to their high position in the food chain. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large bass. Gill net sampling is used to determine the status of large bass. In the chart in Figure 1 below, springtime electrofishing is used as an indicator of largemouth bass abundance (catch per unit effort – CPUE) by size group since 1990.

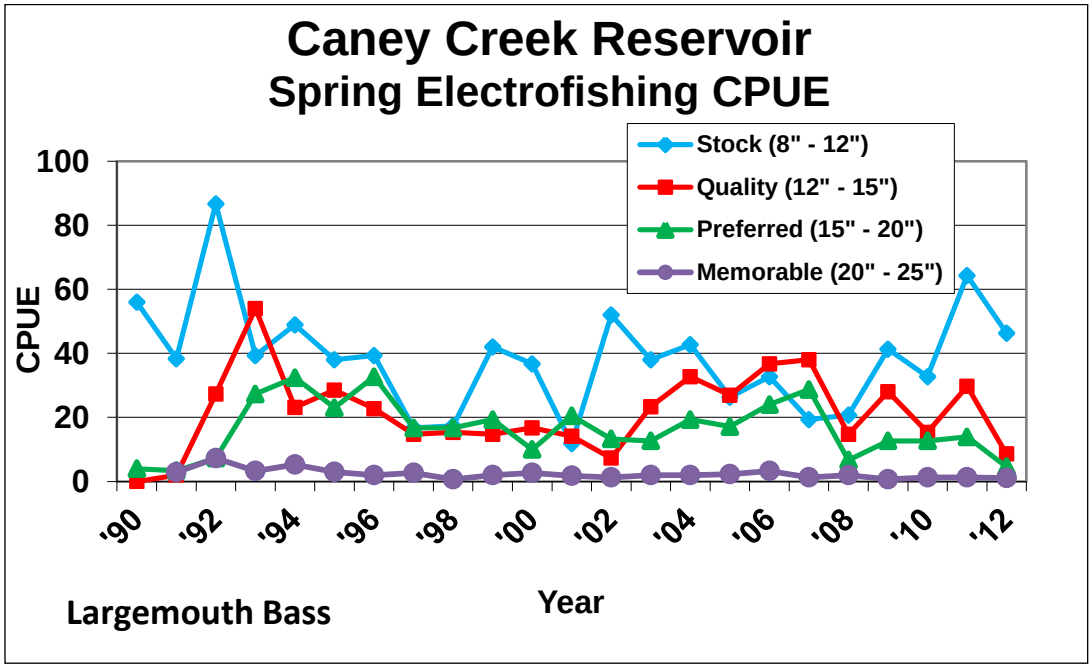


Figure 1. The CPUE for stock-, quality-, preferred- and memorable-size groups of largemouth bass from Caney Creek Reservoir, LA for spring electrofishing results for the time period 1990 – 2012.

Extensive changes have occurred over time in the Caney bass population. Trends in the largemouth bass population of Caney Creek Reservoir have been the direct result of distinct environmental influences and are characterized in stages as listed below.

Stage 1. 1986-1989 Expanding population dominated by small young fish in the early years after impoundment.

Stage 2. 1989-1992 Bass population dominated by undersized individuals that exhibited slow growth due to inadequate forage. Some bass were able to grow through the competition and achieved trophy size. However, the overall condition of the Caney bass population was poor. A slot limit of 14”-17” was implemented as corrective measure to direct harvest to the overabundant small bass. Threadfin shad were also stocked to increase bass forage base.

Stage 3. 1992-1996 With success of corrective management, including the stocking of additional forage base (threadfin shad) and the pending increase of aquatic vegetation into the desirable 15%-30% range, the bass population were healthy and displaying rapid growth rates. The 14”-17” slot limit for bass was increased to enhance the existing bass population and take advantage of the excellent potential for production of trophy bass.

Stage 4. 1996-2005 The reduction in submerged aquatic vegetation to a level below 15% coverage was responsible for reduced bass abundance. The reduction in vegetation resulted in changes in the Caney Creek Reservoir fish population that were similar to those documented in Lake Conroe, Texas. Young sunfish and largemouth bass were subjected to reduced invertebrate forage and to increased predation. Their abundance and subsequently that of adult largemouth bass was reduced after the reduction in vegetation.

Stage 5. 2005-2012 Increased bass abundance is now occurring as a product of the slowly increasing coverage of aquatic vegetation. The beneficial changes are expected to continue as aquatic vegetation increases toward the desirable 15%-30% range of coverage. A decrease in relative abundance of largemouth bass was noted in the 2012 spring electrofishing sample. This may be due to the reduction in submersed aquatic vegetation that occurred because of low water levels resulting from the two previous years of drought.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe size distribution (length) data. Proportional stock density compares the number of fish of quality-size (greater than 12 inches for largemouth bass) to the number of bass of stock-size [greater than 8 inches in total length (TL)]. The PSD is expressed as a percentage. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists mainly of smaller fish. Relative stock density compares the number of fish of a given size range to the number of bass of stock size. A common calculation used in fisheries management is for RSD-Preferred or RSD-P. This value compares the number of largemouth bass > 15 inches TL to the number of stock-size largemouth bass in the population. This is also commonly called RSD-15 values. Values for PSD and RSD – Preferred (> 15 inches in TL) from the spring electrofishing samples are shown in Figure 4 below. Ideal PSD and RSD-P values for largemouth bass range from 40-70 and 10-40, respectively. The size structure indices from spring electrofishing samples are shown in the chart in Figure 2 below. The RSD-P values are lower on average following the disappearance of submerged aquatic vegetation in the reservoir.

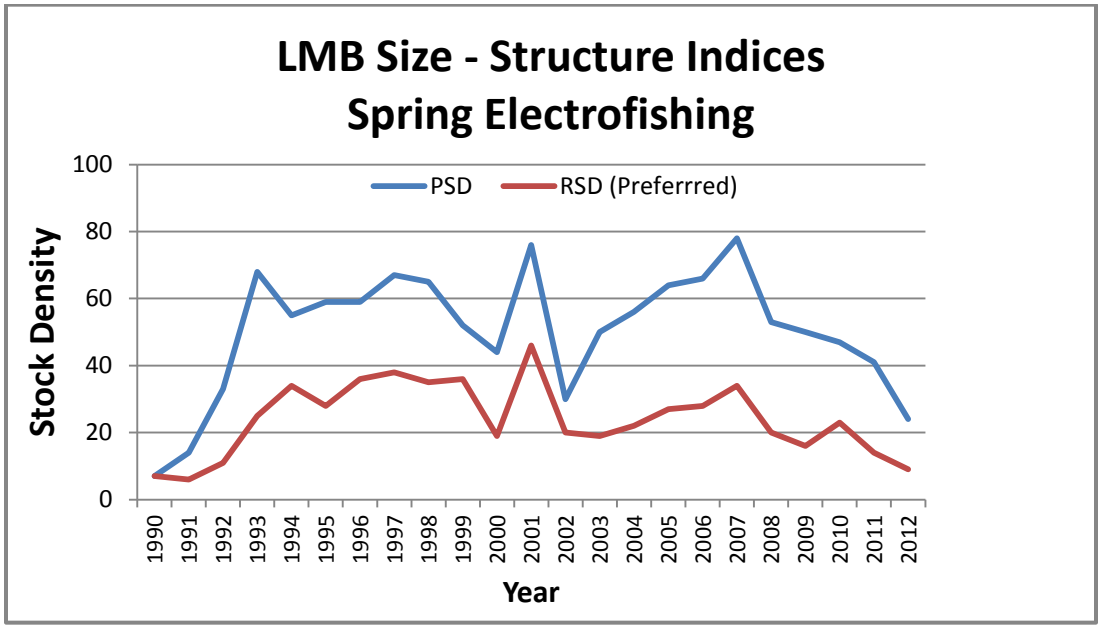


Figure 2. Size-structure indices for largemouth bass on Caney Creek Reservoir, LA, from 1990 to 2012 for spring electrofishing samples.

Standardized gill net sampling conducted on Caney Creek Reservoir may provide insight into the population of trophy size largemouth bass (*Micropterus salmoides*) that is not revealed with electrofishing sampling. Largemouth bass captured in gill nets during sampling from 1994 - 2011 are depicted in Figure 3 below. The results indicate the number of memorable size (20" – 25") largemouth bass (*Micropterus salmoides*) remained fairly constant despite the changes in coverage of submerged aquatic vegetation.

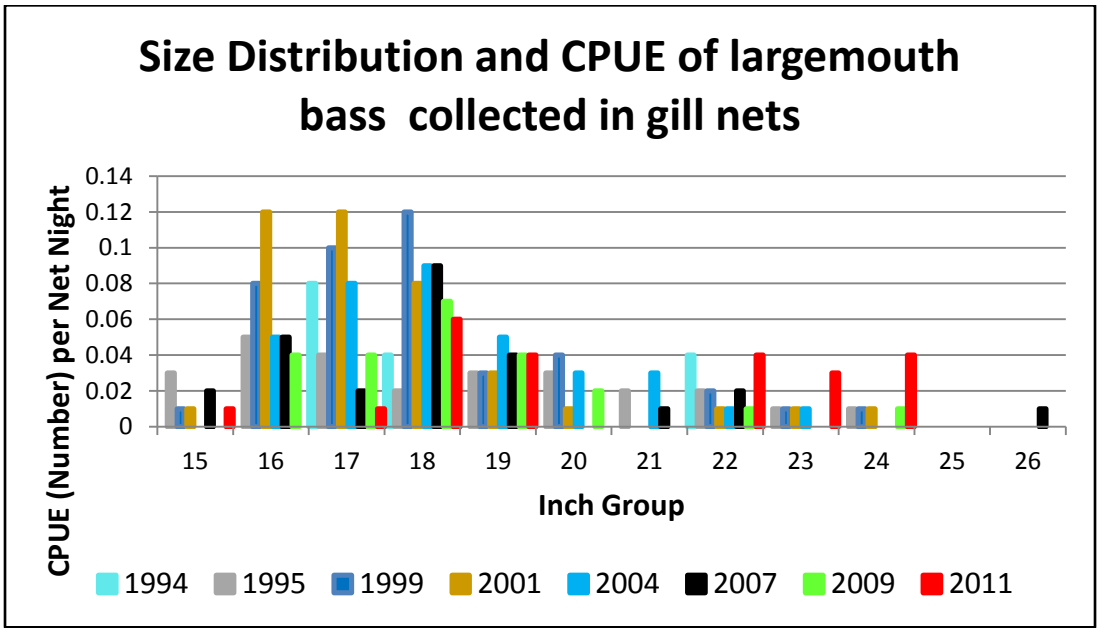


Figure 3. The CPUE (number) per net night (100' net) of largemouth bass (*Micropterus salmoides*) collected during standardized gill net sampling on Caney Creek Reservoir, LA, from 1994 - 2011.

Forage

Forage availability is measured indirectly through measurement of bass body condition (relative weight). In Caney Creek Reservoir, complex cover = aquatic vegetation. With adequate complex cover, sunfish had been very abundant and were the primary forage base for largemouth bass. With the reduction in complex cover, open water fish species became more abundant. Threadfin shad and inland silversides became the primary bass forage species. Stable largemouth bass relative weights as shown in Figure 4 below are an indication that the observed reduction in littoral forage (young sunfish) was offset with a corresponding increase in available pelagic forage (shad).

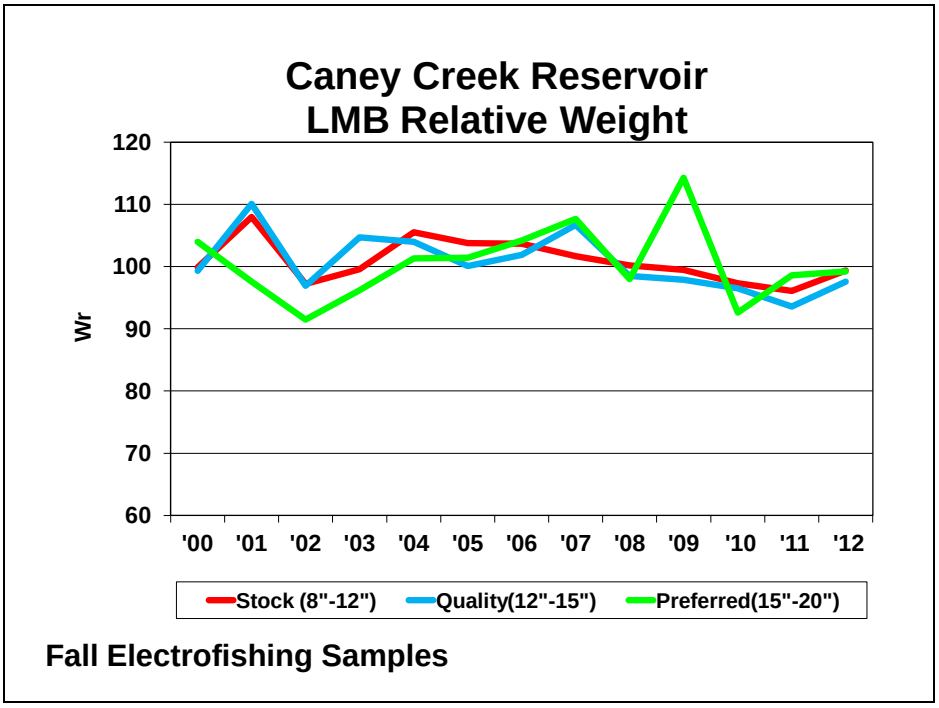


Figure 4. Relative weight (Wr) of stock-, quality-, and preferred-size largemouth bass from Caney Creek Reservoir, LA of bass collected during fall electrofishing sampling from 2000 – 2012.

The habitat change included effects to bass feeding behavior and growth. Ambush type feeding on sunfish in cover required a small expenditure of energy and allowed for more growth. The change to smaller pelagic forage limited bass growth due to the expenditure of considerable energy as indicated in the bass age and growth comparison in Figure 5 below.

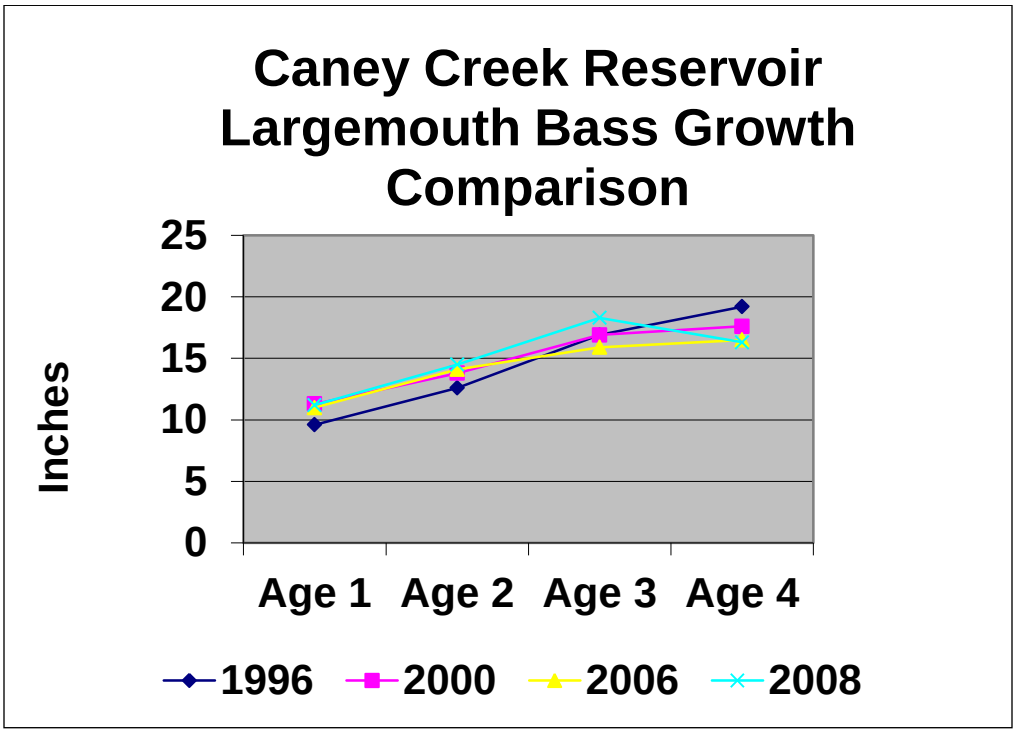


Figure 5. Growth rates of largemouth bass from Caney Creek Reservoir, LA

Largemouth bass genetics-

Genetics surveys indicate the presence of Florida strain genetics in over 50% of the largemouth bass population. Stocking programs are considered successful when over 30% of bass display Florida genetics. The high level of Florida genetics in the Caney Creek Reservoir should be maintained to provide the foundation for trophy bass management. Concurrently, the current high levels of Florida genetics affords an opportunity for increased identification of stocked cohorts. Bi-annual stocking will allow increased identification of particular lines of Florida bass that prove to be most successful in Caney Creek Reservoir. Subsequent stocking will include the selections with highest potential. Because of the Caney Florida bass introductions, genetics sampling has been conducted since impoundment. A compilation of results are listed in Table 1 below.

Table 1. Genetic analysis for largemouth bass from Caney Creek Reservoir, LA for the time period 1987 – 2008.

GENETICS					
Year	Number	Northern	Florida	Hybrid	Florida Influence
1987	346	70%	16%	14%	30%
1988	287	73%	16%	11%	27%
1989	300	82%	5%	13%	18%
1990	300	64%	11%	25%	36%
1991	35	63%	11%	26%	37%
1994	39	49%	23%	28%	51%
2000	66	35%	21%	44%	65%
2004	100	39%	28%	33%	61%
2006	70	16%	37%	47%	84%
2008	160	48%	19%	33%	52%

Sunfish (Bluegill & Redear) and Black Crappie

As explained above, sunfish and crappie abundance has also been the product of habitat changes in Caney Creek Reservoir. Until recently, a reliable sampling technique has not been available to sample sunfish and crappie, of which only black crappie are found in Caney. Low catch rates in 2000 and 2001 followed by higher catch rates in 2004 and 2006 are more an indication of development of the new sampling gear than a measure of fish population status. A new technique of standardized sampling was initiated in 2006, by utilizing 1.0 inch square mesh lead nets set with 2 offshore anchors. Comparisons are made by catch per unit effort (CPUE) of sampling time. The CPUE of bluegill is depicted in the chart in Figure 6 below. The catch rate shows a steady decline from 2006 – 2012; this is likely due to the absence of any significant amounts of submerged aquatic vegetation.

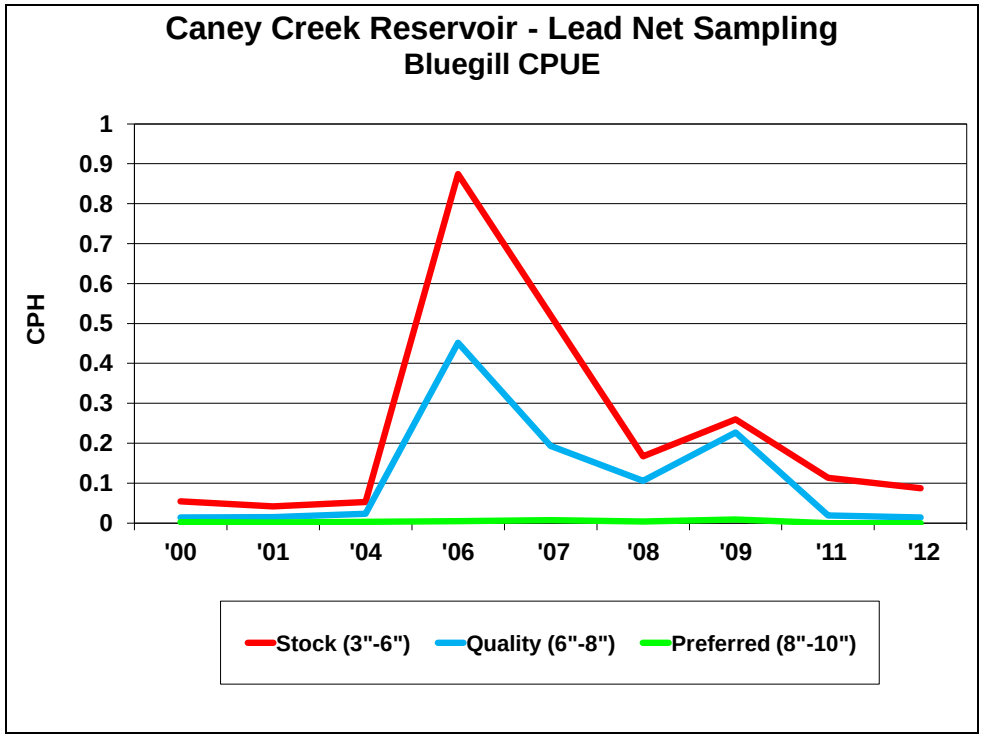


Figure 6. The catch per unit effort (number per hour) of stock-, quality- and preferred-size bluegill in lead net sampling on Caney Creek Reservoir, LA, from 2000 – 2012.

The CPUE of redear in lead nets is shown in the chart in Figure 7 below. The trend of the catch rate follows that of the bluegill CPUE which also declined from 2006 – 2012.

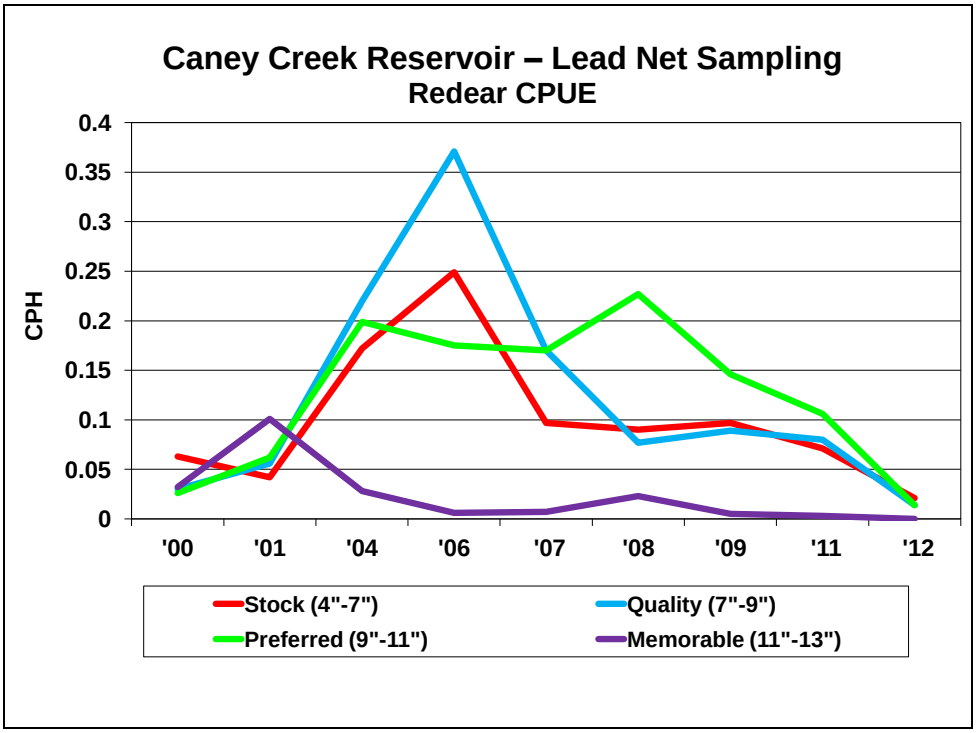


Figure 7. The CPUE(number per hour) of stock-, quality-, preferred- and memorable-size redear in lead net sampling on Caney Creek Reservoir, LA, from 2000 – 2012.

Black crappie is the only species of crappie found in Caney Creek Reservoir. The chart in Figure 8 below shows the CPUE (number per hour) of black crappie in lead net samples from 2000 – 2012. The population of black crappie in the reservoir seems to remain more stable than the bluegill and redear populations during the time period from 2006 – 2012. This is likely because the black crappie are a more open water fish and not negatively impacted by the lack of submerged aquatic vegetation.

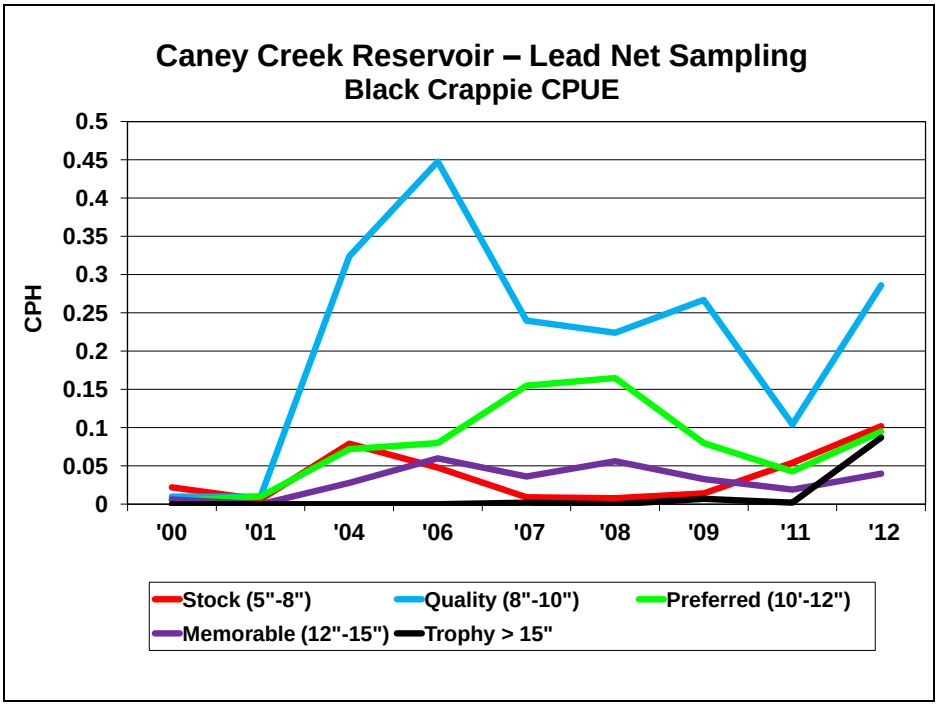


Figure 8. The CPUE (number per hour) of stock-, quality-, preferred-, memorable- and trophy-size black crappie in lead net sampling on Caney Creek Reservoir, LA, from 2000 – 2012.

Commercial

With the exception of flathead catfish, large rough fish species that normally comprise a commercial fishery are not found in this water body.

HABITAT EVALUATION

Aquatic Vegetation

The role of aquatic plants in Caney Creek Reservoir is recognized as significant. Native aquatic plants provide valuable fish and wildlife habitat, improve water quality, reduce rates of shoreline erosion and usually help prevent spread of nuisance exotic plants. A 15-30% areal coverage of submerged aquatics with a diverse composition of native species is recognized as most beneficial to a productive sport fishery. (Described in Caney *Lake Aquatic Plant Management Plan, 1993)*

The management of aquatic vegetation to the confines of a desirable coverage range is an elusive goal dependent on the combined influence of factors that may not be controllable or even defined. In Caney Creek Reservoir, the challenge of aquatic vegetation management is particularly difficult for reasons including the following:

1. Physical characteristics of the reservoir provide ideal growing conditions for aquatic vegetation with limited options available for control.
2. Due to the small watershed of Caney, water level manipulation is not a viable tool to manage aquatic habitat.
3. Potential for introduction of non-native or exotic plants is ever-present. Natural controlling influences for exotic species are typically present only in their native range.
4. Caney is a multi-use impoundment, including fishing, boating, skiing, sailing, swimming, and aesthetic enjoyment. Participants in each endeavor have distinct levels of tolerance for aquatic vegetation. Conflict between the various user groups is inevitable at all levels of coverage.

The most recent aquatic vegetation type map survey was conducted in the summer of 2012, which indicated aquatic vegetation coverage of approximately 5%. Observations made during 2012 showed similar coverage's and percentages of species as that found in 2011. This was a slight decrease in the aquatic vegetation coverage since July 2009, when approximately 8% was observed during the type map survey. The drought conditions beginning in May 2010 and continuing through September 2012 reduced water levels in the lake which negatively impacted aquatic vegetation near the shoreline. The predominant submerged species was bladderwort, with the majority of aquatic vegetation comprised of floating and emergent species. Eelgrass, a submerged species introduced during the re-vegetation effort of 2006, expanded its coverage until impacted by the low water levels caused by the drought and coverage has been reduced from that found in previous years. Water hyacinth and common salvinia are the primary floating nuisance species on the lake. Giant salvinia was found in Caney for the first time in 2009, however it was aggressively treated with herbicides and it has not been problematic since that time. All of these species are limited primarily to the backs of coves and creeks in Caney, but have the potential to completely cover these type areas, degrading habitat and interfering with recreation. These 3 species are treated with herbicides on a routine basis.

Substrate

The majority of the reservoir's substrate is sandy loam with little organic content and is suitable for nesting fish. Exceptions include the upper ends of each arm of the reservoir

where organic content is higher. Suitable spawning substrate is not a limiting factor for nesting fish species.

Artificial Structure

Artificial reefs have been constructed using the polyethylene reef structures in several Louisiana water bodies, including Lake D'Arbonne, Lake Claiborne, and Toledo Bend. Construction of 100 pallet structures was planned by JPWD in March of 2002. However, in October of 2004, JPWD rescinded its resolution for the construction of polyethylene pallet reef structures, expressing intent to collect Christmas trees and sink them instead. Cooperative efforts to construct artificial reefs in Caney Creek Reservoir will remain a standing offer to JPWD under guidelines established by LDWF including the following:

1. The role of LDWF will be that of Administrator/Consultant. As such, the department will make final decisions relative to project design, material selection and placement for all projects sanctioned by the department.

2. LDWF Inland Fisheries Biologist Managers will serve as points of contact for proposed projects. All inquiries and correspondence relative to habitat enhancement projects will be routed to the Biologist Manager responsible for the water body involved. Biologist Managers must grant prior approval for proposed projects to ensure compliance with project guidelines. LDWF assumes no responsibility for projects done independently by groups working outside LDWF guidelines.

3. Habitat enhancement structures must be placed so that they present no danger to boaters, swimmers or any other user groups. To prevent personal injury, care should be exercised during construction and deployment of habitat structures. Project participants should use appropriate safety guidelines for the use of all tools and materials.

4. Prohibited materials include tires, appliances, metallic objects, engines and vehicles.

5. Structures must be well anchored to prevent movement.

6. Materials should be long lived in underwater conditions.

7. Design should be durable to avoid damage during deployment as well as post deployment failure.

8. Structures must be well marked with buoys and/or signs. Marker buoys will be bright yellow. Preferred design for marker buoys is capped PVC pipe with internal ballast and expanding foam filler. Buoys may be marked to credit project sponsors.

9. Project sponsors should provide marker buoys and future maintenance of those buoys.

10. As Project Administrator/Consultant LDWF will advise sponsors regarding the type and location of structures used in this program. LDWF staff will have final approval of locations for artificial structures. LDWF will participate in deployment as manpower and scheduled duties allow.

11. Structures should be easily accessible by anglers. In deciding structure locations,

consideration should be given to natural factors such as wind, water currents and wave action, anticipated water level fluctuations as well as boat traffic and other recreational activities. Ideally, structures should be placed to provide multi-seasonal use by fish and anglers. Individual structure units should be constructed to utilize as much of the water column as possible thereby providing greater opportunity for fish to orient to the structure at preferred depths.

CONDITION IMBALANCE / PROBLEM

Complex cover is currently below 15%-30% areal coverage. A loss in productivity has occurred. In Caney Creek Reservoir, with minor exceptions, complex cover = aquatic vegetation. Coverage of aquatic vegetation should be in the range of 15%-30% areal coverage.

CORRECTIVE ACTION NEEDED

Re-establish and control native aquatic vegetation to provide increased productivity.

RECOMMENDATIONS

1. Aquatic vegetation control plans should consider the efforts to reestablish beneficial native vegetation and the low coverage of aquatic vegetation currently found in the lake. Utilize all available tools to maintain the range of 15-30% areal coverage of aquatic vegetation with a diverse composition of native species. No control efforts should target beneficial native vegetation at this time.

2. Caney Lake should be monitored for any noxious exotic aquatic vegetation. If nuisance aquatic weeds are found, control efforts should include foliar applications of 2,4-D for water hyacinth, and foliar applications of diquat (0.75 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred (8 oz/acre) surfactants from November 1 through March 31 for salvinia. Outside of that time frame, salvinia species should be treated with glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred (8 oz/acre) surfactants.

3. Monitor established eel grass plantings in the areas the plants survived from the previous revegetation efforts on the lake. Monitor the spread of eel grass from the established beds and transplant eel grass to new locations with similar habitat types if plant densities reach high enough levels.

4. Continue bi-annual Florida largemouth bass stockings. Stockings will include over the water transport to areas throughout the lake that offer protection for the young fish.

5. Continue existing recreational and commercial harvest regulations until such time as sampling results indicate that change is appropriate and necessary from a biological perspective or such time as a change in management goal is indicated by the collective opinion of Caney Creek Reservoir anglers.

6. Continue scheduled standardized sampling of fish populations and aquatic vegetation to determine status over time. In 2014 begin an age, growth, mortality and genetics evaluation of the largemouth bass population.

7. Conduct annual hearings to allow for public input regarding management goals.

APPENDIX I

PLAN TO REESTABLISH NATIVE AQUATIC VEGETATION IN CANEY LAKE

The introduction and evaluation of native aquatic vegetation is to be implemented as per techniques as described in *Update to the Propagation and Establishment of Aquatic Plants Handbook, Smart, Dick, and Snow, 2005*. The approach utilizes founder colonies as propagule sources: these are small colonies of aquatic plants established in strategic locations within the reservoir. Once established, founder colonies spread in two manners, including expansion (vegetative spread from the founder colony itself) and colonization (formation of new colonies from fragments, seeds, etc.).

In-lake cultivation has been selected for this project. A large but movable container for holding and stabilizing the pots and a protective fence to prevent grazing (and other disturbances) will be used. Pots will be filled with lake sediments and planted with propagules, and plants allowed to grow within the protection of the fencing. When plants are mature, they are moved to designated sites and transplanted. Empty pots are refilled with sediment substrate, and a subsequent crop is started to ensure a continued supply of mature transplants (or other propagules) throughout the growing season.

Commercial suppliers sell aquatic plant propagules. These propagules may be used as starter materials for plant propagule production, but not for establishing plant colonies. Stem fragments, daughter plants, root crowns, tubers or winter buds, even seeds (usually dependent upon species) may be used as starter materials for aquatic plant cultures. After a culture of a particular species is established, it will be used as a source for the next generation of cultivation.

Shallow coves well protected from winds and wave action will be selected establishment of aquatic plants. High-use areas will be avoided. In addition, wooded shorelines will be avoided due to excessive shading, which greatly reduces the light available to submersed aquatic plants.

Only native plant species are to be used. Diverse communities of native plants will provide the greatest water quality and habitat benefits over the long term. Plant species will be selected based on lake habitats or anticipated environmental conditions.

Timing can be as critical as species selection. Planting will occur before or during periods of active growth to ensure establishment. Plants will be planted as early as practical. Late planting reduces the length of growing season remaining and may decrease the likelihood of success.

Establishment of new colonies of aquatic plants will require protection from herbivores. Herbivores in Caney Creek Reservoir are certainly not limited to grass carp. Nutria, waterfowl and especially turtles are significant grazing pests. Exclosures will be constructed of wire-mesh fencing or orange plastic construction fencing to protect multiple plants.

Once suitable sites are selected and exclosures constructed, the project will proceed in three phases. Phase 1 involves planting and monitoring over a full growing season of test plants of a

variety of species within small protective exclosures. Assuming suitable sediments, water quality, and water levels, these plants will establish and hopefully expand beyond their protective cages, depending on the level of herbivory. During Phase 1, the level of herbivory and, if possible, the sizes and types of herbivores, will be noted. The response of the plants will dictate the best course of action for subsequent growing seasons.

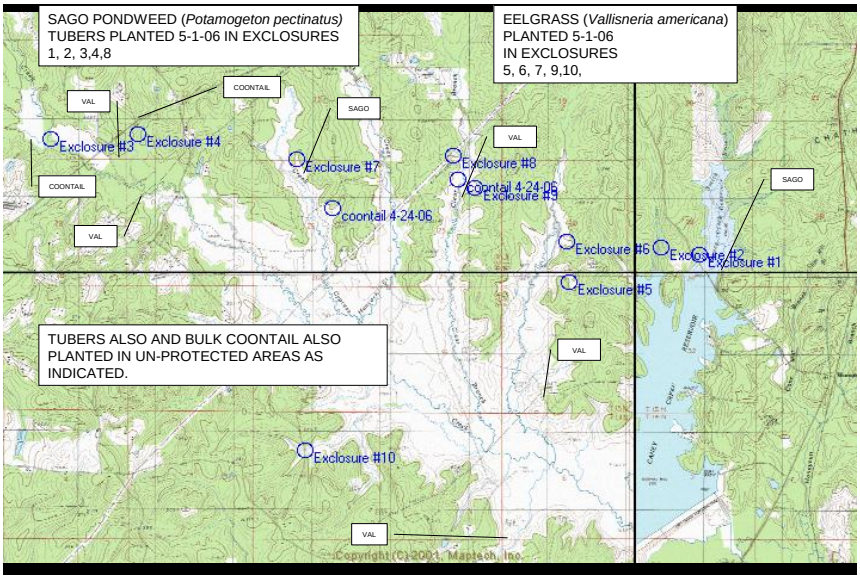
During the second growing season, those species performing best during Phase 1 will receive additional plantings. Phase 2 should result in the successful establishment of founder colonies of several species.

During Phase 3, colonies should expand to fill the niche within the fenced cove, and begin to spread into unprotected areas by vegetative and/or sexual modes of reproduction. Monitoring will continue at this stage, as large-scale disturbances can have serious consequences on newly established plant communities. Additional species may also be desirable to ensure maximum diversity, stability, and resilience of the aquatic plant community.

APPENDIX II

ESTABLISHMENT OF NATIVE VEGETATION

Re-vegetation efforts included the January, 2006 placement of 10 exclosures in sites throughout the impoundment. The exclosures were simple 10ft. x10ft. pens with a layer of 2"x4" fence wire and an outside layer of 1" poultry wire. Tubers of eelgrass (*Vallisneria americana*, sago pondweed (*Potamogeton pectinatus*) were placed in the exclosures on May 1, 2006. Some tubers were also planted in unprotected areas.



Large quantities of coontail (*Ceratophyllum demersum*) vegetation was collected in Black Bayou and transported to Caney Creek Reservoir. Approximately 1 trip per week was made through the months of May, June, and July. Trips were discontinued when the coontail in Black Bayou became brownish and brittle, evidently due to the hot weather.

An evaluation of the plantings was made June 22, 2006 with the use of an underwater camera (Aqua-view). With the exception of two exclosures, all tuber plantings were observed to be successful. One of the unsuccessful exclosures had become covered with watershield, shading the submerged plants. Very little of the vegetation planted outside of the exclosures was observed.

Coontail was observed during evaluation trips, but in much smaller increments than when placed at the planting sites. Small amounts of coontail were found in adjacent water and mixed with emerged vegetation.

During the Caney typemap survey, another evaluation of plantings in the exclosures was made. Four of the exclosures had become covered with watershield, with no submerged vegetation observed underneath. The remainder of the exclosures had only remnants of the eelgrass and sago pondweed that had been observed earlier.

The outside layer of poultry wire had been completely corroded on all pens. The 2”x4” fence wire was intact, but also corroded.